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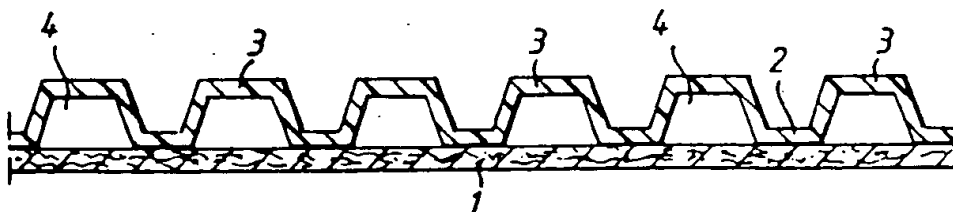
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<b>(21) International Application Number:</b> PCT/SE93/00603 <b>(22) International Filing Date:</b> 30 June 1993 (30.06.93)  <b>(30) Priority data:</b> 9202117-9                      8 July 1992 (08.07.92)                      SE  <b>(71) Applicant (for all designated States except US):</b> MÖLN- LYCKE AB [SE/SE]; S-435 81 Mölnkycke (SE).  <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only) :</b> BILLGREN, Tomas [SE/ SE]; PI 3560, S-430 41 Kullavik (SE).  <b>(74) Agents:</b> ÖRTENBLAD, Bertil et al.; Noréns Patentbyrå AB, Box 27034, S-102 51 Stockholm (SE).		<b>(81) Designated States:</b> JP, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i> <i>In English translation (filed in Swedish).</i>

**(54) Title:** A SURGICAL DRAPE



**(57) Abstract**

The present invention relates to a surgical drape comprised of an absorbent sheet (1) and a fluid-impermeable sheet (2) attached thereto. According to the invention, the fluid-impermeable sheet (2) is provided with projections (3) on that side which lies

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A Surgical Drape

5 The present invention relates to a surgical drape comprised of an absorbent sheet and a fluid-impermeable sheet attached thereto.

10 Applicant retails a surgical drape under the designation Klinidrape® (registered trademark), which is comprised of a three-sheet laminate. The laminate comprises a liquid-absorbent top sheet made of non-woven material, a fluid-impermeable intermediate sheet of polyethylene, and a bottom absorbent sheet of cellulose wadding. The purpose of the top sheet is to  
15 absorb blood and other fluids delivered from the surgical wound, so as to prevent contamination of theatre personnel and the operating theatre as a whole. The plastic film forms a barrier against the transportation of fluid-carried bacteria between the patient and the area of the surgical wound, while the  
20 layer of cellulose wadding on the underneath of the drape is intended to enhance patient comfort, by absorbing perspiration and preventing direct contact of the patient's skin with the plastic sheet.

25 Although Klinidrape® fulfils the requirements of a surgical drape in a highly satisfactory fashion, the drape cannot be readily arranged in folds because of its relatively complicated structure, and is felt to be less soft than those surgical drapes of textile  
30 material traditionally replaced by this drape.

35 The object of the invention is to provide a surgical drape of simpler construction which has equally as good properties as or better properties than Klinidrape®, both with respect to the absorbency of the top sheet and the barrier function of and the patient comfort afforded by the drape, and which can be arranged in folds more easily than the known drape.

This object is achieved in accordance with the invention with a surgical drape of the kind defined in the introduction which is characterized in that the fluid-impermeable sheet is provided with projections on that side of the drape which lies distal to the absorbent sheet. Similar to Klinidrape®, such a surgical drape has absolute barrier properties. Furthermore, such a surgical drape will provide good patient comfort, because only the bottoms of the projections will lie against the patient's skin, thereby providing good air circulation between the skin and the drape.

According to one advantageous embodiment, the projections are cup-shaped. This enhances the absorbency of the top sheet, in that fluid delivered by the surgical wound will be collected and held in the cup-shaped cavities of the projections.

According to a further embodiment of the invention, the absorbent sheet is comprised of nonwoven spunlace material and the fluid-impermeable sheet is comprised of polyethylene film. In a preferred variant, the fluid-impermeable sheet is air-permeable, which in the preferred embodiment is achieved by using plastic film which is microporous.

An exemplifying embodiment of the invention will now be described with reference to the accompanying drawing, in which

Figure 1 is a bottom view of part of a surgical drape constructed in accordance with one embodiment of the invention; and

Figure 2 is a cross-sectional view taken on the line II-II in Figure 1.

The illustrated surgical drape is comprised of an absorbent top sheet 1 and a bottom fluid-impermeable

sheet 2 which, when the drape is used lies nearest the patient's skin. The top sheet 1 is preferably made of a nonwoven material and may advantageously be made of spunlace material, which because it can be stretched  
5 coacts remarkably well with the plastic film, e.g. the polyethylene film of which the bottom fluid-impermeable barrier sheet 2 is preferably comprised. The strength of spunlace material will enable the top sheet to provide all the strength that is required of  
10 the drape, therewith obviating the need for the plastic film to take-up any appreciable load.

The whole of the undersurface of the plastic film 2 is provided with cup-shaped projections 3. This greatly  
15 reduces the abutment surface of the plastic film with the skin, since it is only the bottoms of the projections which come into contact with the patient's skin when the drape is in use. Furthermore, air is able to circulate between the projections on the undersurface  
20 of the drape and the drape is therewith felt to be very comfortable by the patient. Patient comfort can be further enhanced when the plastic film used is microporous, i.e. fluid-impervious but air-permeable.

25 Each projection 3 contains a cavity or space 4 in which fluid delivered by the surgical wound is able to collect. The inventive surgical drape has thus a much greater absorbency than the Klinidrape®.

30 A surgical drape of the aforescribed kind is conveniently manufactured by extruding the plastic material directly onto a roll or cylinder which has cup-shaped, air-permeable moulds disposed over the whole of its peripheral surface, and by then subjecting the under-  
35 sides of said moulds to strong subpressure, thereby vacuum-shaping the projections on the plastic film. Nonwoven material is applied to the plastic film immediately after forming the projections and prior to

subject the plastic film to a supplementary heating process) and thus joined with the parts of the plastic film that lie outside the projections.

5 It will be understood that the projections may have forms other than the truncated conical forms shown in Figures 1 and 2. For instance, the projections may have a hemispherical or part-spherical shape, a pyramidal shape, a cylindrical shape, a cubic shape, etc.  
10 In those cases when the increase of patient comfort that accompanies a decrease in the abutment surface with the skin and improved air-circulation will suffice, the projections need not necessarily be hollow, i.e. have a cup-shaped cavity to increase the absor-  
15 bency of the drape, although such projections are preferred.

It will also be understood that the projections can be arranged in patterns other than the pattern illustrated in Figure 1, and neither need the projections  
20 extend over the whole surface of the drape. Instead, the projections can be provided over separate parts of the drape, with a pattern of projections separated by parts which lack projections. It is preferred, however,  
25 that the pattern of projections will extend over essentially the whole of the drape area. One exception is found in those parts of the drape which are intended to be fastened to the patient's skin and are provided with an adhesive to this end. In order to  
30 achieve a more secure bond between the two sheets of the drape in the aforesaid parts, these parts will preferably be devoid of projections. This will enable a stronger adhesive to be used without risk of breaking the bond between the sheets of the drape when  
35 removing the drape from the patient. Since these parts of the drape are applied around the wound area, this will reduce the risk of wound fluid running or seeping in beneath the drape. In those surgical drape systems that are at present generally used, those parts of the

edge portions of the drape or the peripheral region around a recess in the drape that are provided with an adhesive are adapted for particular surgical operations.

5

Thus, the invention provides a surgical drape which despite being of simpler construction than the Klinidrape® has equally as good functional properties, or even better functional properties than the Klinidrape® and can be arranged in folds more easily than the Klinidrape®, due to the fact that it is comprised solely of two sheets.

10



Claims

1. A surgical drape which is comprised of an absorbent sheet (1) and a fluid-impermeable sheet (2) attached thereto, c h a r a c t e r i z e d in that the fluid-impermeable sheet (2) is provided with projections (3) on that side of the drape which lies distal from the absorbent sheet (1).
2. A surgical drape according to Claim 1, c h a r a c t e r i z e d in that the projections (3) are cup-shaped.
3. A surgical drape according to Claim 1 or 2, c h a r a c t e r i z e d in that the absorbent sheet (1) is made of a nonwoven material.
4. A surgical drape according to Claim 3, c h a r a c t e r i z e d in that the nonwoven material (1) is a spunlace material.
5. A surgical drape according to any one of Claims 1-4, c h a r a c t e r i z e d in that the fluid-impermeable sheet (2) is comprised of plastic film.
6. A surgical drape according to Claim 5, c h a r a c t e r i z e d in that the plastic film (2) is comprised of polyethylene.
7. A surgical drape according to any one of Claims 1-6, c h a r a c t e r i z e d in that the fluid-impermeable sheet (2) is air-permeable.
8. A surgical drape according to any one of Claims 1-7, c h a r a c t e r i z e d in that the drape lacks projections on those parts which include adhesive layers on the side of the fluid-impermeable sheet (2) that lies distal from the absorbent sheet (1).

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Fig. 1

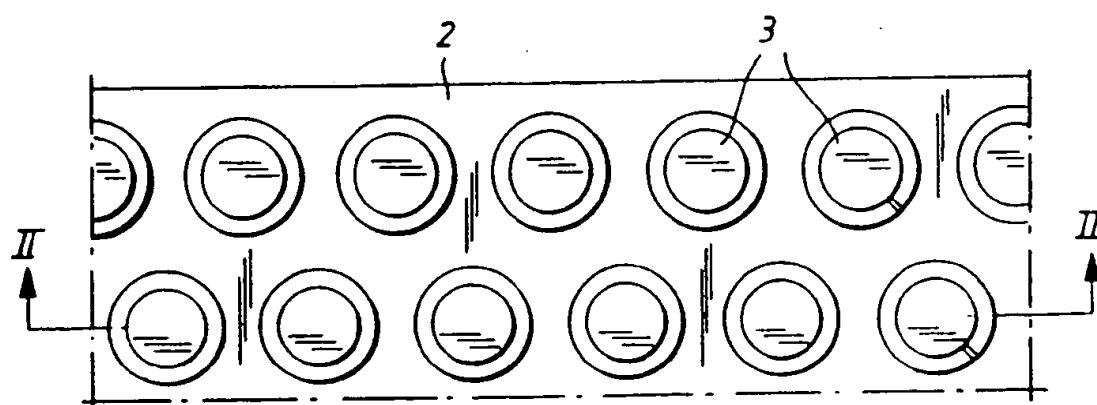
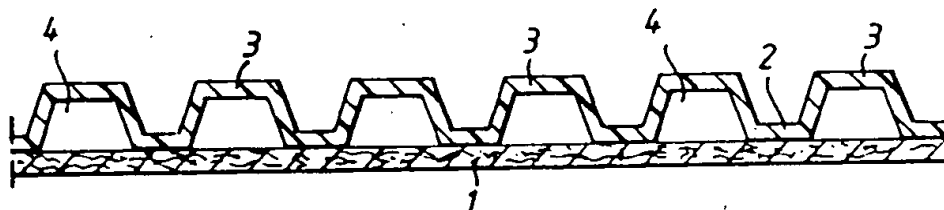


Fig. 2



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<b>B. FIELDS SEARCHED</b>		
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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 3602220 (JOHN BUNYAN), 31 August 1971 (31.08.71)  -- -----	1-8
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1 October 1993		06 -10- 1993
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**Information on patent family members**

26/08/93

International application No.

PCT/SE 93/00603

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3602220	31/08/71	NONE	